

Appl. No.: 10/815,328
Amdt. dated 05/02/2006
Reply to Office action of February 3, 2006

REMARKS/ARGUMENTS

In light of the following amendments and remarks, reexamination and reconsideration of this application, withdrawal of the rejections, and formal notification of the allowability of all claims as presented are earnestly solicited. As detailed in the Office Action mailed February 3, 2006, Claims 1-14 are pending, wherein Claims 1-14 have been rejected. In response to the Office Action, the Applicant has cancelled Claims 1-14, and has added new Claims 15-22, to clarify the subject matter being claimed. The new claims find support throughout the Specification, the Drawings, including the old claims, and no new matter has been added. As such, the Applicant believes that the new claims now define patentable subject matter over the prior art cited in the Office Action and notice to such effect is requested at the Examiner's earliest convenience.

Specification

The Specification was objected to in the Office Action for lacking antecedent basis for the pressure pulse elements being foils, rotating rolls, and non-rotating rolls. In response, the Applicant has revised the Specification, as otherwise detailed herein, to indicate that the pressure pulse elements may be, for example, drainage foils as shown in Figure 4a, or either rotating or non-rotating rolls as shown in Figure 4b. Having addressed this objection, the Applicant thus requests withdrawal of the same.

The Applicant further notes that the Specification has also been amended to indicate that the disclosed positive and negative pressure pulses may be generated by respective pressure pulse elements or portions thereof. That is, a positive pressure pulse may be generated by a positive pressure pulse portion of a pressure pulse element, and a negative pressure pulse may be generated by a negative pressure pulse portion of a pressure pulse element. Such configurations are shown, for example, in existing Figure 3 of the present application, and no new matter has been added.

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Claim Rejections – 35 U.S.C. §112

Claims 7 and 14 were rejected in the Office Action as being non-enabling. In response, the subject matter of Claims 7 and 14 have been incorporated into new Claims 17, 18, 21, and 22, and the Specification has been amended to clarify the description thereof. More particularly, the Specification has been amended to recite that one skilled in the art will appreciate that various combinations of such pressure pulse elements 10 may be implemented on either side of the dewatering space 9 (i.e., the pressure pulse element 10 or portion thereof generating the positive pressure pulse on one side of the dewatering space 9 may be different from the pressure pulse element 10 or portion thereof, generating the coinciding negative pressure pulse along the dewatering space 9, on the other side of the dewatering space 9), as well as along the dewatering space 9 (i.e., the pressure pulse element 10 or portion thereof generating the positive pressure pulse on one side of the dewatering space 9 or the pressure pulse element 10 or portion thereof generating the coinciding negative pressure pulse at a first position along the dewatering space 9 on the other side of the dewatering space 9, may be different from either of the pressure pulse elements 10 or portions thereof generating the coinciding positive and negative pressure pulses at a second position along the dewatering space 9). As otherwise detailed herein, such pressure pulse elements may be, for example, drainage foils as shown in Figure 4a, or either rotating or non-rotating rolls as shown in Figure 4b.

The Applicant submits that new Claims 17, 18, 21, and 22 now recite the various combinations of pressure pulse elements, in that one of the first and second pressure pulse elements comprises at least one of a drainage foil, a rotating roll, and a non-rotating roll, while the other of the first and second pressure pulse elements also comprises at least one of a drainage foil, a rotating roll, and a non-rotating roll.

Having addressed this rejection, the Applicant thus requests withdrawal of the same.

Claim Rejections – 35 U.S.C. §103

Claims 1-6 and 8-13 were rejected in the Office Action as being unpatentable over U.S. Patent No. 4,999,087 to Ebihara. Claims 7 and 14 were rejected in the Office Action as being unpatentable over the Ebihara '087 patent in view of U.S. Patent No. 5,456,803 to Tokuno.

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Claims 1-3, 6, 8-10, and 13 were rejected in the Office Action as being unpatentable over U.S. Patent No. 3,450,596 to Green over the Ebihara '087 patent. In addition, Claims 1, 2, 4, 6, 8, 9, 10, 11, and 13 were rejected in the Office Action as being unpatentable over U.S. Patent No. 1,699,487 to Hinde in view of the Ebihara '087 patent.

In response, Claims 1-14 have been cancelled, and new Claims 15-22 have been added to clarify the subject matter being claimed. The new claims recite that the disclosed positive and negative pressure pulses may be generated by respective pressure pulse elements or portions thereof. That is, a positive pressure pulse may be generated by a positive pressure pulse portion of a pressure pulse element, and a negative pressure pulse may be generated by a negative pressure pulse portion of a pressure pulse element. Such configurations are shown, for example, in existing Figure 3 of the present application. The new claims also more clearly recite that a negative pressure pulse is generated in coincidence with a positive pressure pulse along the dewatering space such that the negative pressure pulse constructively interferes with and amplifies the positive pressure pulse through the dewatering space. Such detail is recited, for example, in Paragraph [0017] of the Specification. As such, by introduction of the new claims, no new matter has been added.

New Claim 15 corresponds to old Claim 1, and recites a method of draining a fiber pulp suspension in a converging dewatering space defined between a first wire and a second wire each traveling from a pulp feed end toward a discharge end of the dewatering space. The dewatering space is configured such that water and a powdery substance are removed from the fiber pulp suspension through the first and second wires conveying the fiber pulp suspension along the dewatering space, wherein the first and second wires have first and second pressure pulse elements, respectively, disposed adjacent thereto opposite the corresponding wire from the dewatering space. Such a method comprises generating a positive pressure pulse directed toward the dewatering space with a positive pressure pulse portion of one of the first and second pressure pulse elements; and generating a negative pressure pulse in coincidence with the positive pressure pulse along the dewatering space, the negative pressure pulse being directed away from the dewatering space and being generated with a negative pressure pulse portion of the other of the first and second pressure pulse elements, such that the negative

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pressure pulse constructively interferes with and amplifies the positive pressure pulse through the dewatering space.

New Claim 19 corresponds to old Claim 8, and recites an apparatus for draining a fiber pulp suspension in a converging dewatering space configured such that water and a powdery substance are removed from the fiber pulp suspension through the first and second wires conveying the fiber pulp suspension along the dewatering space. Such an apparatus comprises a first wire and a second wire cooperating to define a converging dewatering space therebetween, with the first and second wires each traveling from a pulp feed end toward a discharge end of the dewatering space; and a first pressure pulse element and a second pressure pulse element disposed adjacent to the first and second wires, respectively, opposite the corresponding wire from the dewatering space, a positive pressure pulse portion of one of the first and second pressure pulse elements being configured to generate a positive pressure pulse directed toward the dewatering space, and a negative pressure pulse portion of the other of the first and second pressure pulse elements being configured to generate a negative pressure pulse in coincidence with the positive pressure pulse along the dewatering space, the negative pressure pulse being directed away from the dewatering space, such that the negative pressure pulse constructively interferes with and amplifies the positive pressure pulse through the dewatering space.

In contrast, the Ebihara '087, Tokuno '803, Green '596, or Hinde '487 patents do not teach or suggest positive and negative pressure pulses generated by respective pressure pulse elements or portions thereof, wherein the negative pressure pulse is generated in coincidence with a positive pressure pulse along the dewatering space such that the negative pressure pulse constructively interferes with and amplifies the positive pressure pulse through the dewatering space.

More particularly, the Ebihara '087 patent discloses a paper web forming apparatus having two wires moving together for holding a stock therebetween, with a plurality of wire-supporting members supporting the wires. Each of the wire-supporting members forms a wedge-shaped space defined between the wire surface and the wire-supporting member, whereby the width of the wedge-shaped space decreases in the movement direction of the wires. The wire-

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supporting members are spaced apart along the wires such that discrete positive pressure pulses are formed along the wires.

The Tokuno '803 patent discloses a papermaking apparatus for forming a paper web with good fiber formation, wherein a plurality of vertically adjustable forming rolls are provided on the top surface of an endless felt couch between a lead-in roll and a couch roll, and stationary forming bars are provided on the bottom surface of a wire screen. The endless felt couch and the wire screen, between which paper stock is interposed, are caused to move by undulation to generate pulses, which in turn apply shear force onto the paper web to dewater the paper web while facilitating fiber dispersion on the paper web. Pulse pressure is increased by increasing vertical overlap of the forming bars and the forming rolls to increase the undulatory movement, and the number of pulses is changed by changing the number of forming bars and forming rolls.

The Green '596 patent discloses a headbox for a twin wire paper machine wherein a headbox delivers stock to the space above a nip of a pair of two breast or metering rolls. Couch rolls are positioned in parallel below the breast rolls, and each pair of breast and couch rolls has a forming wire entrained thereabout to define a vertical forming zone. The wires move past baffles between the breast and couch rolls in a converging path guided by supporting deflectors which exert a squeezing action on the stock between the wires which expels white water therefrom through the wires, thus forming the paper web. No further detail of the supporting deflectors is provided, but it appears from Figure 1 of the Green '596 patent that the supporting deflectors are immediately opposed across the wires such that respective pressure pulses destructively interfere so as to provide the "squeezing" action disclosed by the Green '596 patent.

The Hinde '487 patent discloses an apparatus for forming fibrous sheet material wherein a former includes a continuous screen or foraminated belt 15 traveling about forming rollers 16, opposing an endless belt or screen 28 traveling about rollers 29, wherein the rollers 16, 29 are immediately opposed across the belts such that respective pressure pulses destructively interfere so as to provide the "squeezing" action disclosed by the Hinde '487 patent.

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Accordingly, the Applicant submits that the Ebihara '087, Tokuno '803, Green '596, and Hinde '487 patents, either separately or in combination, do not teach or suggest positive and negative pressure pulses generated by respective pressure pulse elements or portions thereof, wherein the negative pressure pulse is generated in coincidence with a positive pressure pulse along the dewatering space such that the negative pressure pulse constructively interferes with and amplifies the positive pressure pulse through the dewatering space, as now particularly claimed in new Claims 15-22. Thus, in view of these differences between the Ebihara '087, Tokuno '803, Green '596, and Hinde '487 patents and embodiments of the present invention as now claimed in new Claims 15-22, the Applicant submits that Claims 15-22 now pending are patentable over the references cited in the Office Action.

Conclusion

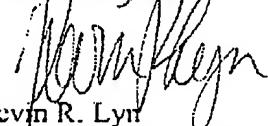
In summary, the Ebihara '087, Tokuno '803, Green '596, and Hinde '487 patents, either separately or in combination, do not disclose, teach, or suggest the embodiments of the present invention as now claimed in Claims 15-22. Accordingly, in view of these differences between the Applicant's invention and the Ebihara '087, Tokuno '803, Green '596, and Hinde '487 patents, it is submitted that the present invention, as defined by the pending claims, is patentable over the prior art cited in the Office Action. As such, Claims 15-22 are believed to be in condition for immediate allowance.

In conclusion, for the reasons set forth above, the Applicant submits that all claims now pending are in condition for immediate allowance. Accordingly, notice to such effect is respectfully requested at the Examiner's earliest opportunity.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

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Respectfully submitted,

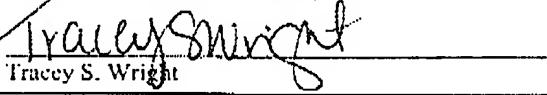

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5/2/06
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